UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,477	04/12/2004	Gregory S. Heady	FRON-10192	4586

7590 03/21/2006

David E. Allred
Schmeiser, Olsen & Watts LLP
18 East University Drive, #101
Mesa, AZ 85201

EXAMINER	
HOFFBERG, ROBERT JOSEPH	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/823,477	HEADY, GREGORY S.	
	Examiner	Art Unit	
	Robert J. Hoffberg	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *1-5,8-19 and 22-35* is/are allowed.

6)☒ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *6-7and 20-21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/12/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show #275 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2 and 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Pokharna et al. (US 2005/011183).

With respect to Claim 1, Pokharna et al. teaches a cooling system for an electronic display (Fig. 6, #640), the system comprising: a heat dissipater (Fig. 6, #650), a compressor (Fig. 6, #220), a liquid phase line (Fig. 6, #614), and a gas phase line (Fig. 6, #612); a heat collector (Fig. 6, #210) thermally connected to each of the liquid phase line and the gas line; and a cover (Fig. 6, top of #610) for enclosing the heat collector within a housing (Fig. 6, #610) of the electronic display.

With respect to Claim 2, Pokharna et al. further teaches that a base (Fig. 6, portion of #210 contacting electrical component) is thermally coupled to the heat collector, wherein the base is adapted for at least one of thermal connection to an electrical component (Para. 0018, lines 1-6) inside the housing or convective heat transfer from air inside the housing.

With respect to Claim 15, Pokharna et al. teaches an electronic display (Fig. 6, #640) and cooling system, comprising: a housing (Fig. 6, #610) holding circuitry (Para. 0018, lines 1-6); a heat collector (Fig. 6, #210) inside the housing (Fig. 6, #610); a gas phase line (Fig. 6, #612) and a liquid phase line (Fig. 6, #614); and a heat dissipater (Fig. 6, #650) external (Fig. 6, not within #610) to the housing, the heat dissipater

thermally connected (Fig. 6, #612 and #614) to the heat collector by the gas phase line and the liquid phase line.

With respect to Claim 16, Pokharna et al. further teaches a base (Fig. 6, portion of #210 contacting circuitry) thermally connected to the circuitry and thermally collected to the heat collector.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna et al. (US 2005/011183) as applied to the above claims in view of Bowman et al. (US 2002/0108744).

With respect to Claim 3 and 18 Pokharna et al. teaches the cooling system of the above claims. Pokharna et al. fails to teach the fins and the recess in the base. Bowman et al. teaches the fins (Fig. 2, #36) to enhance convective heat transfer from circuitry and at least one recess (Fig. 2, #24a) to accommodate the electrical component. It would obvious to one skilled in the art to modify the cooling system of Pokharna et al. with that of Bowman et al. to insure thermal contact of the base to the electrical component and the maximize surface by having fins.

With respect to Claim 17, Pokharna et al. teaches the display and system of the above claims. Pokharna et al. fails to teach a thermal conductor. Bowman et al.

teaches the base comprises a thermal conductor (Fig. 2, #24) configured to interface with the circuitry (Fig. 2, #12) in a predetermined manner, wherein the circuitry is a circuitry of a particular electronic display and the base is configured to fit (see Fig. 2) on the circuitry in a thermally conductive condition. While Pokharna et al. in view of Bowman et al. fail to disclose that the circuitry is of an electronic display, it would be obvious that the circuitry could be for any function including for an electronic display. It would obvious to one skilled in the art to modify the cooling system of Pokharna et al. with that of Bowman et al. to insure thermal contact of the base to the electrical component and performing a required function.

5. Claims 5, 13, 19 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna et al. (US 2005/011183) as applied to claim 1 above.

With respect to Claim 5, Pokharna et al. further teaches that the cover is adapted for connection (cover is on #610) to the housing, for enclosing a circuitry of the electronic display (Para. 0018, lines 1-6), and for enclosing the heat collector (see Fig. 6) in a housing interior and the gas phase line and the liquid phase line pass through (Fig. 6, #612 and #614) the cover. While Pokharna et al. fails to teach that the cover forms a thermal barrier adapted for placement between a housing interior (Fig. 6, inside of #610) and a housing exterior (Fig. 6, outside of #610), it would be obvious to one skilled in the art that the cover will act to some degree as an insulator and act as a barrier between the inside and outside of the housing.

With respect to Claim 13 and 34, Pokharna et al. further teaches a liquid phase line (Fig. 6, #614), a gas phase line (Fig. 6, #612), an electronic display (Fig. 6, #640), a

heat collector (Fig. 6, #210), a cover (Fig. 6, top of #610), a housing (Fig. 6, #610) and a compressor (Fig. 6, #220). While Pokharna et al. fails to disclose a plurality of each of liquid phase lines, gas phase lines, electronic displays, heat collectors, covers, housings, it has been held as obvious to one in skilled in the art to duplicate structural elements. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would obvious to one skilled in the art to modify the cooling system of Pokharna et al. to use a common component such as a compressor to interface with multiple parallel subsystems.

With respect to Claim 19, Pokharna et al. further teaches a cover (cover is on #610) connected to the housing and enclosing (see Fig. 6) the circuitry and the heat collector in a housing interior; wherein the gas phase line and the liquid phase line traverse the cover (see Fig. 6). While Pokharna et al. fails to teach that the cover forms a thermal barrier adapted for placement between a housing interior (Fig. 6, inside of #610) and a housing exterior (Fig. 6, outside of #610), it would be obvious to one skilled in the art that the cover will act to some degree as an insulator and act as a barrier between the inside and outside of the housing.

6. Claim 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna et al. (US 2005/011183) as applied to claim 1 above, in view of Chu et al. (US 2004/0001310).

With respect to Claim 4, Pokharna further teaches that the heat collector is adapted to be enclosed within (see Fig. 6) the housing on an inside of the cover and that the liquid phase line and the gas phase line traverse (see Fig. 6) the cover. Pokharna fails to teach that the heat dissipater is on an outside of the cover. Chu et al.

teaches that the heat dissipater (Fig. 2, #34) is on an outside of the cover and is not adapted (Para. 0025, line 10) to be enclosed in the housing. It would obvious to one skilled in the art to modify the display of Pokharna with that of Chu et al. for the purpose of placing the heat dissipater to dissipate the heat to outside of the housing.

7. Claims 11-12 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna et al. (US 2005/011183) as applied to claim 1 above, in view of Baier (US 4,987,749).

With respect to Claims 11-12 and 32-33, Pokharna et al. teaches the cooling system of claims 1 or 15. Pokharna fails to teach the sensors in the phase lines. Baier teaches the sensors in either a liquid or gas phase line (Col. 2, lines 29-31). While Baier fails to teach a sensor in each of the phase lines, it has been held obvious to one of the art to duplicate the sensors in each of the phase lines. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would obvious to one skilled in the art to modify the display of Pokharna with that of Baier for the purpose of placing sensors to monitor and control the temperature within the cooling system.

8. Claims 14 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna et al. (US 2005/011183) as applied to claim 13 above, in view of Enomoto (US 6,938,432).

With respect to Claim 14 and 35, Pokharna et al. teaches that the cooling system of Claim 13. Pokharna et al. fails to teach a regulator. Enomoto teaches a regulator (Col. 4, line 6) in fluid communication with the compressor (Fig. 1, #2) and a phase lines (see Fig. 1) wherein at least the compressor is located remotely (see Fig. 1, #11 away

from #2) relative to the plurality of heat collector (Fig. 1, #11). While Pokharna et al. in view of Enomoto teaches a heat collector, it has been held obvious to one of the art to duplicate the heat collectors. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would obvious to one skilled in the art to modify the cooling system of Pokharna et al. with that of Enomoto for the purpose of minimizing the size of the cooling system by placing the compressor away from the environment to be cooled.

9. Claims 8-10 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna et al. (US 2005/011183) as applied to above claims in view of Parker et al. (US 6,369793).

With respect Claim 8, 10, 22 and 24-25, Pokharna et al. further teaches that the housing and cover form an enclosure (see Fig. 6). Pokharna et al. fails to teach insulation on the five interior surfaces of the enclosure. Parker et al. teaches insulation (Fig. 8, #102) on an interior surface (see Fig. 8). While Parker fails to teach insulation on five interior surfaces, it has been held as obvious to one in skilled in the art to duplicate structural elements and place on all surfaces requiring insulation. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). It would obvious to one skilled in the art to modify the device and system of Pokharna et al. with that of Parker et al. to provide the maximum insulation to minimize heat transfer through the interior walls.

With respect to Claims 9 and 23, Pokharna et al. fails to disclose insulation on all surfaces except the surface for the display screen is viewed. Parker et al. teaches that the insulation (Fig. 8, #104) is behind the display window (Fig. 6, #110). It would obvious to one skilled in the art to modify the device and system of Pokharna et al. with

that of Parker et al. to provide a non-insulated display window to view the display clearly.

10. Claims 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pokharna et al. (US 2005/011183) as applied to claim 15 above in view of Heady et al. (US 5,991,153).

With respect to Claim 26, Pokharna teaches the display and system of Claim 15 above. Pokharna et al. fails to teach the chambers and fan sets. Heady et al. teaches at least three chambers (Col. 3, line 2) in a housing (Fig. 1, #105) interior; and a plurality of fan sets (Fig. 2, #140 and #150) in the housing interior, each fan set comprising at least one fan, wherein a first fan set is positioned (see Fig. 2) to circulate air from a second chamber to a first chamber and back to the second chamber, wherein a second fan set is positioned (see Fig. 2) to circulate air from the second chamber to a third chamber and back to the second chamber, and wherein excessive heat in the housing interior is transferred outside of the housing without exposing the circuitry in the housing to dust and moisture (Col. 3, line 47, sealed) from outside the housing. With respect to Claim 27, Heady further teaches the at least three chambers and the plurality of fan sets are positioned and controlled to move heat from areas of higher heat concentration to selectively cool overheated locations or to warm overly cool locations (Col. 3, lines 2-15). With respect to Claim 28,Heady et al. teaches that the display component is wholly inside the display housing (Col. 2, line 67), wherein the at least three chambers comprise three chambers (Col. 3, line 2), and wherein the display component (#110) and at least one circuit board (#120) are positioned to at least partially define the first

chamber as a front chamber (Fig. 2, right side), the second chamber as a center chamber (Fig. 2, center), and the third chamber as a rear chamber (Fig. 2, left). With respect to Claim 30, Heady et al. further teaches that the plurality of backlighting lamps (#235) are positioned in the center chamber (Col. 7, lines 60-61). With respect to Claim 31, Heady et al. further teaches that the heat collector (Fig. 2, #215) is positioned (see Fig. 2) in the rear chamber. It would obvious to one skilled in the art to modify the device and system of Pokharna et al. with that of Heady et al. to provide a sealed multi chamber housing with a means to regulate the temperature within the interior of the housing and view the display at night.

With respect to Claim 29, Heady et al. further teaches the front chamber comprises a portion of the housing between (Fig. 2, #207 and #205) the housing and the display component (Fig. 2, #110); the center chamber comprises a portion of the housing between the display component (Fig. 2, #110) and the at least one board (Fig. 2, #220); and the rear chamber comprises a portion of the housing between the at least one board (Fig. 2, #220) and the housing (Fig. 2, #105). While Heady et al. fails to teach that the circuit board is a partition between the center and rear chambers, it does teach that the circuit board is part of the partition between the front and center chambers. It would obvious to one skilled in the art to modify the device and system of Pokharna et al. with that of Heady et al. to minimize costs by using a planar circuit board for not only holding the circuitry but also to be a partition.

Allowable Subject Matter

1. Claims 6-7 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claims 6 and 20 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest that a cooling system comprising of a "an electronic display", "a heat dissipater", "a liquid phase line", "a gas phase line", "a heat collector", "a cover", "a housing" "insulation", "pins" and "fasteners". The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 7 and all claims dependent thereof patentable over art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH

LYNN FEILD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800